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l3 and l4

16

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Derwent World Patents Index

Database: IBM Technical Disclosure Bulletins

l3 and l4

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| USPT,PGPB,JPAB,EPAB,DWPI | l3 and l4 | 16 | L5 |
| USPT,PGPB,JPAB,EPAB,DWPI | pineol or (pine oil) or terpen\$3 or monoterpenes\$1 or pinene\$1 | 23728 | L4 |
| USPT,PGPB,JPAB,EPAB,DWPI | l1 and l2 | 942 | L3 |
| USPT,PGPB,JPAB,EPAB,DWPI | herbicid\$ | 65679 | L2 |
| USPT,PGPB,JPAB,EPAB,DWPI | fatty with (soap\$1 or sapon\$) | 19613 | L1 |

WEST**Generate Collection****Search Results - Record(s) 1 through 10 of 16 returned.** **1. Document ID: US 6039966 A**

L5: Entry 1 of 16

File: USPT

Mar 21, 2000

US-PAT-NO: 6039966

DOCUMENT-IDENTIFIER: US 6039966 A

TITLE: Agrochemical emulsion concentrates

DATE-ISSUED: March 21, 2000

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|--------------------|-------------|-------|----------|---------|
| Kostka; Stanley J. | Cherry Hill | NJ | N/A | N/A |
| Pan; Rennan | Plainsboro | NJ | N/A | N/A |

US-CL-CURRENT: 424/405; 504/195, 504/244, 504/287, 504/352[Full](#) | [Title](#) | [Citation](#) | [Front](#) | [Review](#) | [Classification](#) | [Date](#) | [Reference](#)[KMC](#) | [Drawn Desc](#) | [Image](#) **2. Document ID: US 6020288 A**

L5: Entry 2 of 16

File: USPT

Feb 1, 2000

US-PAT-NO: 6020288

DOCUMENT-IDENTIFIER: US 6020288 A

TITLE: Methods and compositions for enhancing cytochrome P450 in plants

DATE-ISSUED: February 1, 2000

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|---------------------|------------|-------|------------|---------|
| Nonomura; Arthur M. | Boxborough | MA | 01719 | N/A |
| Benson; Andrew A. | La Jolla | CA | 92037 | N/A |
| Nishio; John N. | Laramie | WY | 82070-3917 | N/A |

US-CL-CURRENT: 504/127; 504/128, 504/130, 504/136, 504/138, 504/140, 504/142,
504/143, 504/144, 504/149[Full](#) | [Title](#) | [Citation](#) | [Front](#) | [Review](#) | [Classification](#) | [Date](#) | [Reference](#)[KMC](#) | [Drawn Desc](#) | [Image](#) **3. Document ID: US 5741502 A**

L5: Entry 3 of 16

File: USPT

Apr 21, 1998

US-PAT-NO: 5741502

DOCUMENT-IDENTIFIER: US 5741502 A

TITLE: Homogeneous, essentially nonaqueous adjuvant compositions with buffering capability

DATE-ISSUED: April 21, 1998

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|---------------------|---------|-------|----------|---------|
| Roberts; Johnnie R. | Memphis | TN | N/A | N/A |

US-CL-CURRENT: 424/405, 504/334, 504/362, 514/762, 514/941, 516/199, 516/203,
516/204, 516/55, 516/57, 516/69, 516/71, 516/72, 516/73, 516/74, 516/76, 516/DIG.6

[Full](#) | [Title](#) | [Citation](#) | [Front](#) | [Review](#) | [Classification](#) | [Date](#) | [Reference](#)

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4. Document ID: US 5700397 A

L5: Entry 4 of 16

File: USPT

Dec 23, 1997

US-PAT-NO: 5700397

DOCUMENT-IDENTIFIER: US 5700397 A

TITLE: Emulsifier, emulsion composition, and powder composition

DATE-ISSUED: December 23, 1997

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|-----------------|--------------|-------|----------|---------|
| Maeda; Hirokazu | Kitasoma-gun | N/A | N/A | JPX |
| Furuta; Hitoshi | Kitasoma-gun | N/A | N/A | JPX |
| Takahashi; Taro | Kitasoma-gun | N/A | N/A | JPX |
| Takei; Chiemi | Kitasoma-gun | N/A | N/A | JPX |
| Kurita; Hiroko | Kitasoma-gun | N/A | N/A | JPX |
| Sato; Yoko | Tsukuba-gun | N/A | N/A | JPX |

US-CL-CURRENT: 428/402.24, 426/654, 427/213.3, 516/72, 521/65

[Full](#) | [Title](#) | [Citation](#) | [Front](#) | [Review](#) | [Classification](#) | [Date](#) | [Reference](#)

[KIMC](#) | [Draw Desc](#) | [Image](#)

5. Document ID: US 5698498 A

L5: Entry 5 of 16

File: USPT

Dec 16, 1997

US-PAT-NO: 5698498

DOCUMENT-IDENTIFIER: US 5698498 A

TITLE: Hydroxyalkyl dithiocarbamates, their borated esters and lubricants, functional fluids, greases and aqueous compositions containing the same

DATE-ISSUED: December 16, 1997

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|------------------------|------------|-------|----------|---------|
| Luciani; Carmen V. | Wickliffe | OH | N/A | N/A |
| Rizvi; Syed Q. A. | Mentor | OH | N/A | N/A |
| Roell, Jr.; Bernard C. | Willoughby | OH | N/A | N/A |

US-CL-CURRENT: 508/193; 508/187, 508/322, 508/368, 508/444

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6. Document ID: US 5547918 A

L5: Entry 6 of 16

File: USPT

Aug 20, 1996

US-PAT-NO: 5547918

DOCUMENT-IDENTIFIER: US 5547918 A

TITLE: Biocidal and agrochemical suspensions comprising a structured surfactant with an oil component

DATE-ISSUED: August 20, 1996

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|------------------------|-------------|-------|----------|---------|
| Newton; Jill E. | Stourbridge | N/A | N/A | GBX |
| Clapperton; Richard M. | Stourbridge | N/A | N/A | GBX |
| Nicholson; William J. | Halesowen | N/A | N/A | GBX |

US-CL-CURRENT: 504/361; 424/405, 504/364, 514/786, 514/789, 514/975

[Full](#) | [Title](#) | [Citation](#) | [Front](#) | [Review](#) | [Classification](#) | [Date](#) | [Reference](#) | [KWMC](#) | [Drawn Desc](#) | [Image](#)

7. Document ID: US 5447575 A

L5: Entry 7 of 16

File: USPT

Sep 5, 1995

US-PAT-NO: 5447575

DOCUMENT-IDENTIFIER: US 5447575 A

TITLE: Degradable chelants having sulfonate groups, uses and compositions thereof

DATE-ISSUED: September 5, 1995

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|------------------|--------------|-------|----------|---------|
| Crump; Druce K. | Lake Jackson | TX | N/A | N/A |
| Wilson; David A. | Richwood | TX | N/A | N/A |

US-CL-CURRENT: 134/42; 134/22.14, 134/22.19, 510/305, 510/318, 510/361, 510/407,
510/480, 510/490, 510/533[Full](#) | [Title](#) | [Citation](#) | [Front](#) | [Review](#) | [Classification](#) | [Date](#) | [Reference](#)[KOMC](#) | [Draw Desc](#) | [Image](#) 8. Document ID: US 5407899 A

L5: Entry 8 of 16

File: USPT

Apr 18, 1995

US-PAT-NO: 5407899

DOCUMENT-IDENTIFIER: US 5407899 A

TITLE: Algaecidal and herbicidal compositions comprising terpene wetting agents

DATE-ISSUED: April 18, 1995

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|---------------------|-----------|-------|----------|---------|
| Howell; Bradford S. | Milwaukee | WI | N/A | N/A |

US-CL-CURRENT: 504/152; 504/187, 504/365, 516/75, 516/DIG.1[Full](#) | [Title](#) | [Citation](#) | [Front](#) | [Review](#) | [Classification](#) | [Date](#) | [Reference](#)[KOMC](#) | [Draw Desc](#) | [Image](#) 9. Document ID: US 5098468 A

L5: Entry 9 of 16

File: USPT

Mar 24, 1992

US-PAT-NO: 5098468

DOCUMENT-IDENTIFIER: US 5098468 A

TITLE: Fatty acid based emulsifiable concentrate having herbicidal activity

DATE-ISSUED: March 24, 1992

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|--------------------|---------------|-------|----------|---------|
| Puritch; George S. | Saanichton | N/A | N/A | CAX |
| Bradbury; Roderick | Sidney | N/A | N/A | CAX |
| Mason; Wenda | Brentwood Bay | N/A | N/A | CAX |

US-CL-CURRENT: 504/142; 504/363

[Full](#) [Title](#) [Citation](#) [Front](#) [Review](#) [Classification](#) [Date](#) [Reference](#)[KIMC](#) [Draw Desc](#) [Image](#) 10. Document ID: US 5035741 A

L5: Entry 10 of 16

File: USPT

Jul 30, 1991

US-PAT-NO: 5035741

DOCUMENT-IDENTIFIER: US 5035741 A

TITLE: Fatty acid based emulsifiable concentrate having herbicidal activity

DATE-ISSUED: July 30, 1991

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|--------------------|---------------|-------|----------|---------|
| Puritch; George S. | Saanichton | N/A | N/A | CAX |
| Bradbury; Roderick | Sidney | N/A | N/A | CAX |
| Mason; Wenda | Brentwood Bay | N/A | N/A | CAX |

US-CL-CURRENT: 504/142; 504/320, 504/363[Full](#) [Title](#) [Citation](#) [Front](#) [Review](#) [Classification](#) [Date](#) [Reference](#)[KIMC](#) [Draw Desc](#) [Image](#)

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Display Format:

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L5: Entry 11 of 16

File: USPT

Aug 30, 1988

US-PAT-NO: 4767552

DOCUMENT-IDENTIFIER: US 4767552 A

TITLE: Urazole compositions useful as additives for functional fluids

DATE-ISSUED: August 30, 1988

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|-------------------|--------|-------|----------|---------|
| Sowerby; Roger L. | Mentor | OH | N/A | N/A |

US-CL-CURRENT: 508/279; 44/317, 44/343

| | | | | | | | | | | | |
|----------------------|-----------------------|--------------------------|-----------------------|------------------------|--------------------------------|----------------------|---------------------------|------------------------|----------------------|----------------------------|-----------------------|
| Full | Title | Citation | Front | Review | Classification | Date | Reference | Claims | KWMC | Drawn Desc | Image |
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 12. Document ID: US 4341782 A

L5: Entry 12 of 16

File: USPT

Jul 27, 1982

US-PAT-NO: 4341782

DOCUMENT-IDENTIFIER: US 4341782 A

TITLE: Pyrimidine derivatives and agricultural uses

DATE-ISSUED: July 27, 1982

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|------------------|-----------|-------|----------|---------|
| Konishi; Kazuo | Takatsuki | N/A | N/A | JPX |
| Matsuura; Kazuho | Kyoto | N/A | N/A | JPX |

US-CL-CURRENT: 514/275; 544/253, 544/262, 544/292, 544/330, 544/332

| | | | | | | | | | | |
|----------------------|-----------------------|--------------------------|-----------------------|------------------------|--------------------------------|----------------------|---------------------------|----------------------|----------------------------|-----------------------|
| Full | Title | Citation | Front | Review | Classification | Date | Reference | KWMC | Drawn Desc | Image |
|----------------------|-----------------------|--------------------------|-----------------------|------------------------|--------------------------------|----------------------|---------------------------|----------------------|----------------------------|-----------------------|

 13. Document ID: US 3911121 A

L5: Entry 13 of 16

File: USPT

Oct 7, 1975

US-PAT-NO: 3911121

DOCUMENT-IDENTIFIER: US 3911121 A

TITLE: Terpene phenol resin compositions containing organophosphorus insecticides

DATE-ISSUED: October 7, 1975

INVENTOR-INFORMATION:

NAME

CITY

STATE

ZIP CODE

COUNTRY

Roberts; Lyman Richard

Modesto

CA

N/A

N/A

US-CL-CURRENT: 514/136; 514/119, 514/120, 514/121, 514/122, 514/132, 514/144,
514/970

[Full](#) | [Title](#) | [Citation](#) | [Front](#) | [Review](#) | [Classification](#) | [Date](#) | [Reference](#)

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14. Document ID: US 3666776 A

L5: Entry 14 of 16

File: USPT

May 30, 1972

US-PAT-NO: 3666776

DOCUMENT-IDENTIFIER: US 3666776 A

TITLE: DIOXABICYCLO OCTANE COMPOUNDS

DATE-ISSUED: May 30, 1972

INVENTOR-INFORMATION:

NAME

CITY

STATE

ZIP CODE

COUNTRY

Dachs; Norman W.

Buffalo

NY

N/A

N/A

US-CL-CURRENT: 549/397; 514/937, 987/50

[Full](#) | [Title](#) | [Citation](#) | [Front](#) | [Review](#) | [Classification](#) | [Date](#) | [Reference](#)

[KMC](#) | [Draw Desc](#) | [Image](#)

15. Document ID: NZ 330283 A, WO 9953764 A2, AU 9935416 A, EP 1073337 A2

L5: Entry 15 of 16

File: DWPI

Jan 26, 2001

DERWENT-ACC-NO: 1999-620523
 DERWENT-WEEK: 200109
 COPYRIGHT 2001 DERWENT INFORMATION LTD

TITLE: Agricultural composition used as herbicide, fungicide and pesticide

INVENTOR: INNES, R M

PRIORITY-DATA: 1998NZ-0330283 (April 21, 1998)

PATENT-FAMILY:

| PUB-NO | PUB-DATE | LANGUAGE | PAGES | MAIN-IPC |
|---------------|------------------|----------|-------|------------|
| NZ 330283 A | January 26, 2001 | N/A | 000 | A01N025/16 |
| WO 9953764 A2 | October 28, 1999 | E | 029 | A01N065/00 |
| AU 9935416 A | November 8, 1999 | N/A | 000 | N/A |
| EP 1073337 A2 | February 7, 2001 | E | 000 | A01N065/00 |

INT-CL (IPC): A01N 25/16; A01N 27/00; A01N 31/02; A01N 31/04; A01N 31/06; A01N 37/02; A01N 37/04; A01N 43/90; A01N 65/00

[Full](#) | [Title](#) | [Citation](#) | [Front](#) | [Review](#) | [Classification](#) | [Date](#) | [Reference](#) | [KMD](#) | [Draw Desc](#) | [Image](#)

16. Document ID: US 5741502 A

L5: Entry 16 of 16

File: DWPI

Apr 21, 1998

DERWENT-ACC-NO: 1998-260464
 DERWENT-WEEK: 199820
 COPYRIGHT 2001 DERWENT INFORMATION LTD

TITLE: Homogeneous, non-aqueous agrochemical adjuvant formulation - containing spray oil, surfactant and optional buffering agent

INVENTOR: ROBERTS, J R

PRIORITY-DATA: 1996US-0731415 (October 15, 1996), 1990US-0554359 (July 19, 1990), 1992US-0960894 (October 14, 1992), 1995US-0394839 (February 27, 1995)

PATENT-FAMILY:

| PUB-NO | PUB-DATE | LANGUAGE | PAGES | MAIN-IPC |
|--------------|----------------|----------|-------|------------|
| US 5741502 A | April 21, 1998 | N/A | 013 | A01N025/02 |

INT-CL (IPC): A01N 25/02; A01N 27/00; B01J 13/00

[Full](#) | [Title](#) | [Citation](#) | [Front](#) | [Review](#) | [Classification](#) | [Date](#) | [Reference](#) | [KMD](#) | [Draw Desc](#) | [Clip Img](#) | [Image](#)

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L5: Entry 3 of 16

File: USPT

Apr 21, 1998

DOCUMENT-IDENTIFIER: US 5741502 A

TITLE: Homogeneous, essentially nonaqueous adjuvant compositions with buffering capability

ABPV:

(d) saponified fatty acids or blends thereof;

ABPV:

(g) alpha or beta pinene,

BSPR:

The present invention relates to the field of agricultural, forestry, turf, ornamental, industrial, aquatic, rights-of-ways and other applications where pesticides are used and, more specifically, to adjuvant compositions which improve the chemical and physical properties of a pesticide such as an herbicide, insecticide or fungicide.

BSPR:

It is known that petroleum hydrocarbon spray oils increase the efficacy of herbicides, fungicides and other pesticides by enhancing the deposition characteristics and wetting and spreading of the spray solution resulting in a more even and uniform spray deposit or by increasing the biological effect of certain pesticides. Other oils such as esterified vegetable oils and once-refined vegetable oils are known to exhibit similar properties. Such spray oils can increase penetration and slow evaporation. Paraffin based spray oil is a petroleum oil used as dormant spray, summer oil, carrier for pesticides or an adjuvant to increase the efficacy of agricultural chemicals.

BSPR:

In U.S. Pat. No. 3,977,322, an agricultural spray oil composition comprising a major amount of a petroleum oil and a minor amount of a vegetable oil is disclosed as providing a particularly improved carrier which enhances the effectiveness of selective herbicides.

BSPR:

A synergistic herbicidal composition is disclosed in U.S. Pat. No. 4,755,207 and comprises a non-phytotoxic crop oil, a surfactant, and hydrophobic mycoherbicide spore. The oils are once refined vegetable oils or highly refined paraffinic material. The surfactant can be anionic, cationic or nonionic.

BSPR:

It is advantageous to reduce the separate addition of each of the adjuvants to the herbicide or pesticide to save time and to reduce possibility of error in the amounts added since mixing is typically done in the field by unskilled workers. However, the components of an adjuvant composition must form a homogeneous liquid mixture, not a slurry or suspension. Otherwise, the amount of oil and surfactant in the spray will vary from use to use and these variations would adversely affect the physical properties of the spray. In the prior compositions, adjuvants such as buffering agents have been added to the water, then combined with the other adjuvants and the active ingredient because the phosphate compounds used as buffering agents are hydrophilic polar compounds. It is difficult to combine such compounds with oil and obtain a homogeneous composition having the desired spray uniformity and coverage.

BSPR:

The present invention is a homogeneous, essentially nonaqueous adjuvant

composition comprising a spray oil, a surfactant and optionally a buffering agent in an amount to reduce the pH to below about 7. It is possible that the oil and/or surfactant component could be used in lieu of the buffering agent if the oil and/or surfactant can reduce the pH of the composition to below about 7. It is also possible that some oils, when coupled into water, could provide buffering on their own. When mixed with a pesticide, the composition provides one-step addition of the adjuvants to obtain a more uniform spread of the spray solution of the herbicide or pesticide, improved penetration and slower evaporation. The adjuvant can also be used as a pesticide or herbicide without the addition of any additional pesticide to the adjuvant. The presence of the buffering agent maintains the pH of the mixture within a desired range pH below about 7 in the presence of alkaline waters typically used in spray solutions.

BSPR:

Agricultural spray oils useful in the compositions of this invention have distillation ranges between about 400.degree. to about 500.degree. F. Pour point values reflect the wax content of spray oils. A high value indicates a large amount of wax in the oil. Waxes reduce the spreading and penetration properties of the spray oil. The spray oils used in the present invention have pour points no greater than about 20.degree. F. Generally, oils having a distillation range of 400.degree.-435.degree. F. are used in adjuvants for fungicide and pesticide applications. Oils having a distillation range of about 445.degree. to about 500.degree. F. are employed in adjuvants applications directed at herbicides. As noted previously, the higher boiling oils have increased phytotoxicity which is useful when the objective is to enhance the effectiveness of some contact-type herbicides.

BSPR:

The adjuvant composition of this invention is useful with a broad range of pesticides where an oil concentration adjuvant is recommended. If applied properly, these adjuvant compositions can be used with fertilizer products and herbicides. Optimum applications and effects can be influenced by the crop, pest, spray equipment, spray volume, pressure, droplet size, spray mixture, environmental factors and other factors. Consequently, observation of the spray deposit is typically made and the adjuvant concentrations are adjusted accordingly. In mixing the adjuvant compositions with the pesticide or herbicide, the spray tank is filled one-half full with water and agitated. The pesticide and/or fertilizer is added as directed by labeling or in the following sequence: dry flowables or water dispersible granules, wettable powders, flowables, solutions and emulsifiable concentrates. The filling of the tank with water is continued and the adjuvant composition is added last and agitation is continued.

BSPR:

The pesticide or herbicide compositions containing the adjuvant compositions of the present invention can be applied by ground, aerial or aquatic spray equipment. In most cases, enough of the composition is applied to allow for adjustment of the spray pH to the desired range and uniform wetting and deposition of the spray on the leaf surfaces without undue runoff. For ground application, 1-4 pints are used in 20-100 gallons of spray solution per acre. Concentration should not exceed 1.5% v/v. For low volume aerial application, 2-8 fl. oz. per acre are typically used. In an aquatic application, 1-4 pints per acre are used not to exceed 1.5% v/v concentration.

BSPR:

The herbicide compositions containing the adjuvant compositions of the present invention include, but are not limited to, triazines, (such as atrazine or simazine), anilines, (such as trifluralin and pendimethalin), anilides, (such as propanil), phenoxy, such as 2,4-D, oximes, (such as sethoxydim). The insecticide compositions containing the adjuvant compositions of the present invention include, but are not limited to, organophosphates, (such as dimethoate and methyl parathion), carbamates, (such as carbaryl), and pyrethroids, (such as cyfluthrin and cypermethrin). The fungicide compositions containing the adjuvant compositions of the present invention include, but are not limited to, phthalamides, (such as captan), conazoles, (such as propiconazole).

BSPL:

4. Saponified fatty acids or blends thereof:

BSPL:

7. Alpha or beta pinene.

BSPU:

Such as, but not limited to saturated and unsaturated soaps of about 6 to about 18 carbon atoms. The saponified fatty acids can be present in an amount from about 1 to about 99%, preferably from about 50 to about 99% and most preferably from about 50 to about 80%. The saponified fatty acids may also be derived from any of the vegetable oils previously mentioned. The saponified fatty acids can be used without a buffering agent when they reduce the pH of the solution to about 7 or below. The saponified fatty acids can be used without a buffering agent when they reduce the pH to below about 7.

BSPV:

(d) saponified fatty acids or blends thereof;

CLPR:

12. An agricultural composition comprising a herbicide and the homogeneous, essentially nonaqueous adjuvant composition as claimed in claim 1.

CLPR:

13. The agricultural composition as claimed in claim 12, wherein the herbicide is propanil.

CLPV:

(h) alpha or beta pinene,

CLPV:

(h) alpha or beta pinene,

CLPV:

(h) alpha or beta pinene,

CLPW:

(c) saponified fatty acids or blends thereof;

CLPW:

(e) polybutenes of the following formula ##STR14## where n is a number from about 1 to about 50; (f) alpha or beta pinene,

CLPW:

(c) saponified fatty acids or blends thereof;

CLPW:

(e) polybutenes of the following formula ##STR23## where n is a number from about 1 to about 50; (f) alpha or beta pinene,

CLPW:

(d) saponified fatty acids or blends thereof;

CLPW:

(f) polybutenes of the following formula ##STR32## where n is a number from about 1 to about 50; (h) alpha or beta pinene,

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L5: Entry 8 of 16

File: USPT

Apr 18, 1995

DOCUMENT-IDENTIFIER: US 5407899 A

TITLE: Algaecidal and herbicidal compositions comprising terpene wetting agents

ABPL:

The combination of surfactant carrier mixture with an aqueous copper complex in emulsified form provides rapid algaecidal and herbicidal action. The composition is of particular use in running water systems.

BSPR:

The present invention relates to a composition active as an algaecide and a herbicide. In particular, the present invention relates to a composition for use in aquatic environments to control weeds and algae.

BSPR:

Other non-copper based systems are known. For example 2-propenal is used to control weeds and algae in flowing irrigation systems. However, it is highly flammable and toxic. Severe restrictions have been placed upon its use. Herbicides such as Aquathol.TM. and diquat control aquatic weeds but there are restrictions on the use of such treated water for irrigation.

BSPR:

There is therefore a need for a system which is effective as an algaecide and herbicide in flowing water systems, which satisfies environmental controls and which is safe for fish and use in irrigation supplies.

BSPR:

The carrier composition is useful to formulate herbicide and algaecide emulsion compositions, having as an active ingredient a copper coordination complex. The carrier composition enhances delivery of copper ions to plant cells and is a rapid acting carrier formulation, particularly useful in flowing water systems.

BSPR:

Examples of anionic surfactants include soaps, such as, the water-soluble salts (e.g., the sodium, potassium, ammonium and alkanol-ammonium salts) of higher fatty acids containing from about 8 to 20 carbon atoms.

BSPR:

The adjuvant surfactant or wetting agent used in the present invention is preferably non-ionic and is preferably a terpene. The term "terpene" as used herein means a hydrocarbon of the general formulae C._{sub.10}H._{sub.16} or C._{sub.15}H._{sub.24} usually found in association with turpentine, citrus extracts, and many other natural essential oils. Most preferred for use in the carrier compositions of the invention is limonene. Limonene is a well known compound, and d,l-limonene occurs in various etherial oils, such as dill, lemon, orange and bergamot. The adjuvant surfactant may be present in the carrier formulation of the invention in an amount sufficient for surface-tension reducing of the aqueous solution containing copper compounds, to be carried by the carrier composition. In general such an amount is within the range of from about 5 to about 70 wt %, more preferably from about 20 to 50 wt % of the carrier composition.

BSPR:

The carrier compositions of the invention enhance the up-take of copper ions from aqueous solutions containing copper ions as the herbicidal or algaecidal effective ingredient, by plant organisms. The enhancement is observed in terms of speed of the take-up and quantity of copper ions which penetrate into the physiological system of the organism.

CLPR:

2. An environmentally acceptable agricultural carrier composition which comprises a mixture of surfactants for formulating emulsions of herbicidal and/or algicidal aqueous solutions of copper coordination complexes, said mixture obtained from admixture of

CLPR:

3. The carrier composition of claim 2, wherein the terpene is limonene.

CLPR:

4. An environmentally acceptable agricultural carrier composition which comprises a mixture of surfactants for formulating emulsions of herbicidal and/or algicidal aqueous solutions of copper coordination complexes, said mixture obtained from admixture of

CLPR:

5. A composition for use as an algaecide and herbicide, which comprises;

CLPV:

C. a surface-tension reducing proportion of a terpene wetting agent.

CLPV:

an emulsion of a herbicidally and algaecidally effective amount of a copper complex in aqueous solution as the active ingredient; and

CLPV:

from about 5 to 70 percent by weight of the carrier of a terpene wetting agent.

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| 4774234.pn. | 3 |

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| USPT,PGPB,JPAB,EPAB,DWPI | safer | 28183 | <u>L4</u> |
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| USPT,PGPB,JPAB,EPAB,DWPI | herbicid\$ | 65679 | <u>L1</u> |

WEST**Generate Collection****Search Results - Record(s) 1 through 10 of 21 returned.** **1. Document ID: US 6258752 B1**

LS5 : Entry 1 of 21

File: USPT

Jul 10, 2001

US-PAT-NO: 6258752

DOCUMENT-IDENTIFIER: US 6258752 B1

TITLE: Non-staining herbicidal soap

DATE-ISSUED: July 10, 2001

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|---------------------|------------|-------|----------|---------|
| Sedun; Frederick S. | Saanichton | N/A | N/A | CAX |
| Wilson; Cameron D. | Victoria | N/A | N/A | CAX |

US-CL-CURRENT: 504/320[Full](#) | [Title](#) | [Citation](#) | [Front](#) | [Review](#) | [Classification](#) | [Date](#) | [Reference](#)[KIMC](#) | [Draw Desc](#) | [Image](#) **2. Document ID: US 5994269 A**

LS5 : Entry 2 of 21

File: USPT

Nov 30, 1999

US-PAT-NO: 5994269

DOCUMENT-IDENTIFIER: US 5994269 A

TITLE: Method of preparing glyphosate herbicide formulations

DATE-ISSUED: November 30, 1999

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|--------------------|------------|-------|----------|---------|
| Bugg; M. Wayne | Ellisville | MO | N/A | N/A |
| Arnold; Kristin A. | Kirkwood | MO | N/A | N/A |
| White; Randall J. | Miamisburg | OH | N/A | N/A |

US-CL-CURRENT: 504/127; 504/142, 504/206, 504/320, 504/362[Full](#) | [Title](#) | [Citation](#) | [Front](#) | [Review](#) | [Classification](#) | [Date](#) | [Reference](#)[KIMC](#) | [Draw Desc](#) | [Image](#) **3. Document ID: US 5948731 A**

LS5 : Entry 3 of 21

File: USPT

Sep 7, 1999

US-PAT-NO: 5948731

DOCUMENT-IDENTIFIER: US 5948731 A

TITLE: Herbicidally-active fatty acid salts

DATE-ISSUED: September 7, 1999

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|------------------|-----------|-------|----------|---------|
| Evans; Steven L. | San Diego | CA | N/A | N/A |
| Harvey; John | San Diego | CA | N/A | N/A |
| Tsujino; Yasuko | Kanagawa | N/A | N/A | JPX |

US-CL-CURRENT: 504/320[Full](#) [Title](#) [Citation](#) [Front](#) [Review](#) [Classification](#) [Date](#) [Reference](#)[KOMC](#) [Drawn Desc](#) [Image](#) 4. Document ID: US 5919733 A

L5: Entry 4 of 21

File: USPT

Jul 6, 1999

US-PAT-NO: 5919733

DOCUMENT-IDENTIFIER: US 5919733 A

TITLE: Non-staining herbicidal soap

DATE-ISSUED: July 6, 1999

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|---------------------|------------|-------|----------|---------|
| Sedun; Frederick S. | Saanichton | N/A | N/A | CAX |
| Wilson; Cameron D. | Victoria | N/A | N/A | CAX |

US-CL-CURRENT: 504/320[Full](#) [Title](#) [Citation](#) [Front](#) [Review](#) [Classification](#) [Date](#) [Reference](#)[KOMC](#) [Drawn Desc](#) [Image](#) 5. Document ID: US 5703019 A

L5: Entry 5 of 21

File: USPT

Dec 30, 1997

US-PAT-NO: 5703019

DOCUMENT-IDENTIFIER: US 5703019 A

TITLE: Herbicidally-Active fatty acid aliphatic amine salts

DATE-ISSUED: December 30, 1997

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|------------------|-----------|-------|----------|---------|
| Evans; Steven L. | San Diego | CA | N/A | N/A |
| Harvey; John | San Diego | CA | N/A | N/A |
| Tsujino; Yasuko | Kanagawa | N/A | N/A | JPX |

US-CL-CURRENT: 504/320

[Full](#) | [Title](#) | [Citation](#) | [Front](#) | [Review](#) | [Classification](#) | [Date](#) | [Reference](#)[KMC](#) | [Draw Desc](#) | [Image](#)**□ 6. Document ID: US 5296226 A**

L5: Entry 6 of 21

File: USPT

Mar 22, 1994

US-PAT-NO: 5296226

DOCUMENT-IDENTIFIER: US 5296226 A

TITLE: Bird repellent compositions

DATE-ISSUED: March 22, 1994

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|--------------------|---------|-------|----------|---------|
| Askham, Leonard R. | Pullman | WA | N/A | N/A |

US-CL-CURRENT: 424/405; 514/537, 514/943[Full](#) | [Title](#) | [Citation](#) | [Front](#) | [Review](#) | [Classification](#) | [Date](#) | [Reference](#)[KMC](#) | [Draw Desc](#) | [Image](#)**□ 7. Document ID: US 5284819 A**

L5: Entry 7 of 21

File: USPT

Feb 8, 1994

US-PAT-NO: 5284819

DOCUMENT-IDENTIFIER: US 5284819 A

TITLE: Herbicidally-active glycol esters of fatty acids

DATE-ISSUED: February 8, 1994

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|-----------------|----------|-------|----------|---------|
| Zorner, Paul S. | La Costa | CA | N/A | N/A |
| Tsujino, Yasuko | Kangawa | N/A | N/A | JPX |
| Kamioka, Osamu | Yokohama | N/A | N/A | JPX |

US-CL-CURRENT: 504/127; 504/140, 504/142, 504/291, 504/313[Full](#) | [Title](#) | [Citation](#) | [Front](#) | [Review](#) | [Classification](#) | [Date](#) | [Reference](#)[KMC](#) | [Draw Desc](#) | [Image](#)**□ 8. Document ID: US 5106410 A**

L5: Entry 8 of 21

File: USPT

Apr 21, 1992

US-PAT-NO: 5106410

DOCUMENT-IDENTIFIER: US 5106410 A

TITLE: Fatty acid based herbicidal compositions

DATE-ISSUED: April 21, 1992

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|--------------------|---------------|-------|----------|---------|
| Puritch; George S. | Saanichton | N/A | N/A | CAX |
| Bradbury; Roderick | Sidney | N/A | N/A | CAX |
| Mason; Wenda | Brentwood Bay | N/A | N/A | CAX |

US-CL-CURRENT: 504/142; 504/320, 504/365

| | | | | | | | | | | |
|----------------------|-----------------------|--------------------------|-----------------------|------------------------|--------------------------------|----------------------|---------------------------|----------------------|----------------------------|-----------------------|
| Full | Title | Citation | Front | Review | Classification | Date | Reference | KOMC | Drawn Desc | Image |
|----------------------|-----------------------|--------------------------|-----------------------|------------------------|--------------------------------|----------------------|---------------------------|----------------------|----------------------------|-----------------------|

 9. Document ID: US 5098468 A

L5: Entry 9 of 21

File: USPT

Mar 24, 1992

US-PAT-NO: 5098468

DOCUMENT-IDENTIFIER: US 5098468 A

TITLE: Fatty acid based emulsifiable concentrate having herbicidal activity

DATE-ISSUED: March 24, 1992

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|--------------------|---------------|-------|----------|---------|
| Puritch; George S. | Saanichton | N/A | N/A | CAX |
| Bradbury; Roderick | Sidney | N/A | N/A | CAX |
| Mason; Wenda | Brentwood Bay | N/A | N/A | CAX |

US-CL-CURRENT: 504/142; 504/363

| | | | | | | | | | | |
|----------------------|-----------------------|--------------------------|-----------------------|------------------------|--------------------------------|----------------------|---------------------------|----------------------|----------------------------|-----------------------|
| Full | Title | Citation | Front | Review | Classification | Date | Reference | KOMC | Drawn Desc | Image |
|----------------------|-----------------------|--------------------------|-----------------------|------------------------|--------------------------------|----------------------|---------------------------|----------------------|----------------------------|-----------------------|

 10. Document ID: US 5098467 A

L5: Entry 10 of 21

File: USPT

Mar 24, 1992

US-PAT-NO: 5098467

DOCUMENT-IDENTIFIER: US 5098467 A

TITLE: Fatty acid based herbicidal compositions

DATE-ISSUED: March 24, 1992

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|--------------------|---------------|-------|----------|---------|
| Puritch; George S. | Saanichton | N/A | N/A | CAX |
| Bradbury; Roderick | Sidney | N/A | N/A | CAX |
| Mason; Wenda | Brentwood Bay | N/A | N/A | CAX |

US-CL-CURRENT: 504/142; 504/320, 504/365[Full](#) | [Title](#) | [Citation](#) | [Front](#) | [Review](#) | [Classification](#) | [Date](#) | [Reference](#)[RIMC](#) | [Drawn Desc](#) | [Image](#)[Generate Collection](#)

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WEST**Generate Collection****Search Results - Record(s) 11 through 20 of 21 returned.** **11. Document ID: US 5035741 A**

L5: Entry 11 of 21

File: USPT

Jul 30, 1991

US-PAT-NO: 5035741

DOCUMENT-IDENTIFIER: US 5035741 A

TITLE: Fatty acid based emulsifiable concentrate having herbicidal activity

DATE-ISSUED: July 30, 1991

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|--------------------|---------------|-------|----------|---------|
| Puritch; George S. | Saanichton | N/A | N/A | CAX |
| Bradbury; Roderick | Sidney | N/A | N/A | CAX |
| Mason; Wenda | Brentwood Bay | N/A | N/A | CAX |

US-CL-CURRENT: 504/142; 504/320, 504/363[Full](#) | [Title](#) | [Citation](#) | [Front](#) | [Review](#) | [Classification](#) | [Date](#) | [Reference](#) | [Claims](#) | [KOMC](#) | [Drawn Desc](#) | [Image](#) **12. Document ID: US 5030629 A**

L5: Entry 12 of 21

File: USPT

Jul 9, 1991

US-PAT-NO: 5030629

DOCUMENT-IDENTIFIER: US 5030629 A

TITLE: Compositions and method comprising heterocyclic compounds containing two heteroatoms as membrane penetration enhancers

DATE-ISSUED: July 9, 1991

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|-------------------------|---------------|-------|----------|---------|
| Rajadhyaksha; Vithal J. | Mission Viejo | CA | 92691 | N/A |

US-CL-CURRENT: 514/211.07; 514/228.8, 514/256, 514/275, 514/356, 514/374, 514/376,
514/377, 514/385, 514/392, 514/423, 514/470, 514/652, 514/772, 514/788, 514/946,
514/947[Full](#) | [Title](#) | [Citation](#) | [Front](#) | [Review](#) | [Classification](#) | [Date](#) | [Reference](#) | [Claims](#) | [KOMC](#) | [Drawn Desc](#) | [Image](#) **13. Document ID: US 4983591 A**

L5: Entry 13 of 21

File: USPT

Jan 8, 1991

US-PAT-NO: 4983591

DOCUMENT-IDENTIFIER: US 4983591 A

TITLE: Environmentally safe, broad spectrum insecticide

DATE-ISSUED: January 8, 1991

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|---------------------|------------|-------|----------|---------|
| Puritch; George S. | Saanichton | N/A | N/A | CAX |
| Salloum; Gregory S. | Victoria | N/A | N/A | CAX |
| Nijholt; Willem W. | Victoria | N/A | N/A | CAX |

US-CL-CURRENT: 514/65; 514/557, 514/558, 514/66, 514/69, 514/74

[Full](#) | [Title](#) | [Citation](#) | [Front](#) | [Review](#) | [Classification](#) | [Date](#) | [Reference](#) | [KMC](#) | [Drawn Desc](#) | [Image](#)

14. Document ID: US 4975110 A

L5: Entry 14 of 21

File: USPT

Dec 4, 1990

US-PAT-NO: 4975110

DOCUMENT-IDENTIFIER: US 4975110 A

TITLE: Fatty acid based herbicidal compositions

DATE-ISSUED: December 4, 1990

INVENTOR-INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|--------------------|---------------|-------|----------|---------|
| Puritch; George S. | Saanichton | N/A | N/A | CAX |
| Bradbury; Roderick | Sidney | N/A | N/A | CAX |
| Mason; Wenda | Brentwood Bay | N/A | N/A | CAX |

US-CL-CURRENT: 504/142; 504/320, 504/363, 504/364

[Full](#) | [Title](#) | [Citation](#) | [Front](#) | [Review](#) | [Classification](#) | [Date](#) | [Reference](#) | [KMC](#) | [Drawn Desc](#) | [Image](#)

15. Document ID: US 4904645 A

L5: Entry 15 of 21

File: USPT

Feb 27, 1990

US-PAT-NO: 4904645

DOCUMENT-IDENTIFIER: US 4904645 A

TITLE: Environmentally safe, broad spectrum insecticide

DATE-ISSUED: February 27, 1990

INVENTOR- INFORMATION:

| NAME | CITY | STATE | ZIP CODE | COUNTRY |
|---------------------|------------|-------|----------|---------|
| Puritch; George S. | Saanichton | N/A | N/A | CAX |
| Salloum; Gregory S. | Victoria | N/A | N/A | CAX |
| Nijholt; Willem W. | Victoria | N/A | N/A | CAX |

US-CL-CURRENT: 514/65; 514/557, 514/558, 514/66, 514/69, 514/74

[Full](#) | [Title](#) | [Citation](#) | [Front](#) | [Review](#) | [Classification](#) | [Date](#) | [Reference](#)

[KOMC](#) | [Draw. Desc](#) | [Image](#)

16. Document ID: WO 9207467 A1

L5: Entry 16 of 21

File: EPAB

May 14, 1992

PUB-NO: WO009207467A1

DOCUMENT-IDENTIFIER: WO 9207467 A1

TITLE: IMPROVED FATTY ACID-BASED HERBICIDAL COMPOSITION

PUBN-DATE: May 14, 1992

INVENTOR- INFORMATION:

| NAME | COUNTRY |
|--------------|---------|
| MASON, WENDA | CA |

INT-CL (IPC): A01N 37/02; A01N 37/06; A01N 57/02

EUR-CL (EPC): A01N057/20

[Full](#) | [Title](#) | [Citation](#) | [Front](#) | [Review](#) | [Classification](#) | [Date](#) | [Reference](#)

[KOMC](#) | [Draw. Desc](#) | [Image](#)

17. Document ID: US 5106410 A

L5: Entry 17 of 21

File: EPAB

Apr 21, 1992

PUB-NO: US005106410A

DOCUMENT-IDENTIFIER: US 5106410 A

TITLE: Fatty acid based herbicidal compositions

PUBN-DATE: April 21, 1992

INVENTOR- INFORMATION:

| NAME | COUNTRY |
|--------------------|---------|
| PURITCH, GEORGE S | CA |
| BRADBURY, RODERICK | CA |
| MASON, WENDA | CA |

INT-CL (IPC): A01N 31/18; A01N 37/00

EUR-CL (EPC): A01N037/02; A01N037/02

[Full](#) | [Title](#) | [Citation](#) | [Front](#) | [Review](#) | [Classification](#) | [Date](#) | [Reference](#)[KMC](#) | [Drawn Desc](#) | [Image](#)**□ 18. Document ID: US 5098467 A**

L5: Entry 18 of 21

File: EPAB

Mar 24, 1992

PUB-NO: US005098467A
DOCUMENT-IDENTIFIER: US 5098467 A
TITLE: Fatty acid based herbicidal compositions

PUBN-DATE: March 24, 1992

INVENTOR-INFORMATION:

| NAME | COUNTRY |
|--------------------|---------|
| PURITCH, GEORGE S | CA |
| BRADBURY, RODERICK | CA |
| MASON, WENDA | CA |

INT-CL (IPC): A01N 37/02
EUR-CL (EPC): A01N037/02; A01N037/02

[Full](#) | [Title](#) | [Citation](#) | [Front](#) | [Review](#) | [Classification](#) | [Date](#) | [Reference](#)[KMC](#) | [Drawn Desc](#) | [Image](#)**□ 19. Document ID: US 4975110 A**

L5: Entry 19 of 21

File: EPAB

Dec 4, 1990

PUB-NO: US004975110A
DOCUMENT-IDENTIFIER: US 4975110 A
TITLE: Fatty acid based herbicidal compositions

PUBN-DATE: December 4, 1990

INVENTOR-INFORMATION:

| NAME | COUNTRY |
|--------------------|---------|
| PURITCH, GEORGE S | CA |
| BRADBURY, RODERICK | CA |
| MASON, WENDA | CA |

INT-CL (IPC): A01N 37/00; A01N 37/18
EUR-CL (EPC): A01N037/02; A01N037/02

[Full](#) | [Title](#) | [Citation](#) | [Front](#) | [Review](#) | [Classification](#) | [Date](#) | [Reference](#)[KMC](#) | [Drawn Desc](#) | [Image](#)**□ 20. Document ID: US 5037654 A, CA 1330710 C**

L5: Entry 20 of 21

File: DWPI

Aug 6, 1991

DERWENT-ACC-NO: 1991-252040

DERWENT-WEEK: 199744

COPYRIGHT 2001 DERWENT INFORMATION LTD

TITLE: Improved pesticidal activity compsns. with polyacrylamide - allows use of milder, not normally used materials as pesticides

INVENTOR: BRADBURY, R; MASON, W ; MCHARG, D ; PURITCH, G S

PRIORITY-DATA: 1988US-0187589 (April 28, 1988)

PATENT-FAMILY:

| PUB-NO | PUB-DATE | LANGUAGE | PAGES | MAIN-IPC |
|--------------|----------------|----------|-------|------------|
| US 5037654 A | August 6, 1991 | N/A | 000 | N/A |
| CA 1330710 C | July 19, 1994 | N/A | 000 | A01N025/10 |

INT-CL (IPC): A01N 25/08; A01N 25/10; A01N 37/02; A01N 43/40

[Full](#) | [Title](#) | [Citation](#) | [Front](#) | [Review](#) | [Classification](#) | [Date](#) | [Reference](#)

[KMD](#) | [Draw Desc](#) | [Image](#)

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| Terms | Documents |
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Search Results - Record(s) 21 through 21 of 21 returned.

21. Document ID: WO 8903178 A, AU 8826252 A, BR 8807258 A, EP 335961 A, JP 03505722 W

L5: Entry 21 of 21

File: DWPI

Apr 20, 1989

DERWENT-ACC-NO: 1989-129863

DERWENT-WEEK: 198917

COPYRIGHT 2001 DERWENT INFORMATION LTD

TITLE: Biodegradable aq. herbicidal compsn. - comprises fatty acid(s) or salts, and ammonium nitrate or sulph(am)ate

INVENTOR: MCHARG, D; PURITCH, G S

PRIORITY-DATA: 1987US-0109473 (October 16, 1987)

PATENT - FAMILY:

| PUB-NO | PUB-DATE | LANGUAGE | PAGES | MAIN-IPC |
|---------------|-------------------|----------|-------|----------|
| WO 8903178 A | April 20, 1989 | E | 032 | N/A |
| AU 8826252 A | May 2, 1989 | N/A | 000 | N/A |
| BR 8807258 A | October 31, 1989 | N/A | 000 | N/A |
| EP 335961 A | October 11, 1989 | E | 000 | N/A |
| JP 03505722 W | December 12, 1991 | N/A | 000 | N/A |

INT-CL (IPC): A01N 37/00; A01N 59/00

Full Title | **CLS.21** | **REF.21**

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|-----------|-----------|
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L5: Entry 1 of 21

File: USPT

Jul 10, 2001

DOCUMENT-IDENTIFIER: US 6258752 B1
TITLE: Non-staining herbicidal soap

BSPR:

Herbicides and other pesticides have more recently been formulated from naturally occurring active ingredients such as fatty acids or fatty acid salts. Some herbicides use fatty acids and fatty acid salts as co-active ingredients with other compounds. Examples of such compositions are disclosed in British Patent No. 2,247,621 and U.S. Pat. Nos. 4,774,234; 4,975,110; 5,035,741; and 5,106,410.

BSPR:

Herbicides are commonly applied to driveways, sidewalks, patios, walls, and similar structures to eliminate any weeds or mosses growing in joints or cracks in such structures. Certain known fatty acid and fatty acid salt herbicides can leave behind an unsightly white residue when applied to these substrates. Such known herbicides, although chemically effective, have been a major source of customer complaint because they leave behind an aesthetically unpleasing residue.

DEPR:

This test compared concrete staining and grass phytotoxicity of a range of ammonium soap compositions with fatty acid emulsions. Every formulation contained 1% propanol and 1% of Aerosol A-196 (Cyanamid) emulsifier. The formulations were sprayed onto concrete and turf at a rate of 1.0 L/m.². Commercially available fatty acid/salt based herbicides (TopGun (Safer, Ltd.), SpeedWeed (Pan Britannica Industries, Ltd.) and DeMoss (Safer, Ltd.)) were used as per their label recommendations. Every solution was sprayed onto 3 areas of grass and 2 areas of concrete. After drying overnight on concrete, the stains were washed with a garden hose and subjected to 5 days of natural rain before the "After Wash" concrete staining evaluation. The recorded rainfall on each of the five days between spraying and final evaluation was 2.2, 0.8, 2.6, 2.0, and 13.0 mm, respectively.

WEST **Generate Collection**

L5: Entry 3 of 21

File: USPT

Sep 7, 1999

DOCUMENT-IDENTIFIER: US 5948731 A
TITLE: Herbicidally-active fatty acid salts

ABPL:

The subject invention pertains to novel methods and compositions utilizing novel fatty acid salts which exhibit excellent herbicidal activity in controlling unwanted vegetation. The novel compositions and methods described here facilitate effective weed control using a water soluble salt of a fatty acid.

BSPR:

Recently, salts of fatty acids, primarily sodium or potassium fatty acid salts, have been used commercially as pesticides. Compositions having excellent pesticidal properties which exploit these salts are available commercially from Safer, Inc., under the trademark SAFER INSECTICIDAL SOAP. A herbicidally active composition utilizing partially saponified fatty acids as the active ingredient is sold by Safer, Inc. under the trademark SHARPSHOOTER. These fatty acid compositions are effective, naturally occurring pesticides which have no known long term environmental effects. Although fatty acid salts have herbicidal activity, it would be desirable to provide an alternative composition having an unsaponified active ingredient while maintaining the environmental compatibility of the pesticide and reducing the eye and skin irritancy of the product.

BSPR:

U.S. Pat. Nos. 2,626,862; 4,975,110; and 5,035,741 describe certain fatty acid compositions useful as herbicides. These documents mention the use of salts of fatty acids. Specifically, "saponified" fatty acids are discussed. Saponification means "to form the sodium or potassium salt of a fatty acid." It stems from the soap making industry where animal fats (esters of fatty acids and glycerol) are hydrolyzed in sodium or potassium hydroxide to form the sodium or potassium salts of the fatty acids (soaps) and free glycerol. Mixing sodium or potassium hydroxide with a free fatty acid to form the salt is also called saponification. "Complete" saponification means that 100% of the fatty acid is converted to the salt; "partial" saponification means that <100% of the acid is converted to the salt. This means there is a mixture of the free fatty acid and the fatty acid salt. U.S. Pat. No. 4,975,110 indicates that the free fatty acid form is preferable to fatty acid salts for use as a herbicide. These patents also teach that the proper formulation of a fatty acid herbicide requires one or more surfactants.

BSPR:

Specifically exemplified herein are saturated fatty acid salts of length C7 to C11. The use of the compositions described here, when used in the proportions and application rates set forth more fully hereinafter, results in an unexpected herbicidal effect. Further aspects of the subject invention are formulations and methods of formulating fatty acid herbicides which facilitate the preparation of fatty acid herbicidal compositions without the use of surfactants. Also disclosed are procedures for preventing the formation of fatty acid esters in a composition comprising a fatty acid and a compound having free hydroxyl groups.

DEPR:

The subject invention pertains to the discovery of certain fatty acid salts which have advantageous herbicidal properties. The herbicidal salts of the subject invention can overcome many of the difficulties described in the prior art pertaining to the herbicidal use of fatty acids. Specifically, the prior art taught that salts of fatty acids have reduced herbicidal activity compared to free acids and that the preferred herbicidal form was the free fatty acid rather

than a salt. The prior art also taught that herbicidal preparations of fatty acids must be emulsions requiring one or more surfactants. It should be noted that the use of surfactants with fatty acid compositions presents difficulties because the surfactant must not undergo chemical reaction with the acid. Therefore, surfactants with free hydroxyl groups cannot be used due to the potential for formation of an ester between the fatty acid and the surfactant hydroxyl group. Thus, it has been necessary to use an ester or ether as a surfactant.

DEPR:

We have discovered that aliphatic amine salts of fatty acids have excellent herbicidal activity and overcome many of the problems which have heretofore limited the use of fatty acids as herbicides. The aliphatic amines of the subject invention are those which form cationic ammonium salts. Whereas potassium and sodium salts of fatty acids are not effective herbicides because of their substantially reduced herbicidal activity compared to the free fatty acid, the amine (ammonium) salts of the subject invention have excellent herbicidal activity and solubility characteristics. We have found that aliphatic amine salts of fatty acids have herbicidal activity very similar to the free fatty acids often can be formulated without the use of a surfactant. Thus, the aliphatic amine salts can be provided as a "ready-to-use" salt in water soluble form with or without addition of surfactants, or formulated as herbicidal concentrates with a variety of surfactants.

DEPR:

Greenhouse trials were carried out to demonstrate the herbicidal activity obtained by application of a fatty acid organic amine salt. Barnyardgrass was planted into 2.times.2 in pots in a soil-less potting mix (PROMIX) and was cultivated in a greenhouse maintained at daytime temperatures of 70-90RF, and was watered by sub-irrigation to maintain vigor. Plants were treated at the 2-3 true leaf stage.

DEPR:

Herbicidal concentrates of a free fatty acid, a saponified potassium salt, and an isopropylamine salt were prepared. Pelargonic acid was formulated according to mixing methods well known to practitioners in the art and using surfactants such as those disclosed in U.S. Pat. No. 4,975,110. Pelargonic acid was obtained as "EMERY 1202" from Quantum Chemical Corporation, Cincinnati, Ohio. An emulsifiable concentrate containing 60% by weight pelargonic acid was prepared in an emulsion system of 9% by weight "BRIJ 58" (ICI AMERICAS, INC, Wilmington, Del.), 0.5% by weight "RENNEX-31" (ICI), with the balance being ethylene glycol. A potassium salt concentrate was prepared as above, but contained approximately 20% by weight KOH with the ethylene glycol adjusted accordingly. An isopropylamine salt was likewise prepared with approximately 16% by weight isopropylamine with the ethylene glycol adjusted accordingly. A quantity of each of these 60% fatty acid concentrates was diluted with sufficient water to prepare an aqueous mixture containing 4% active ingredient calculated as the fatty acid. These mixtures, and appropriate dilutions thereof, were applied to barnyardgrass plants using a track sprayer calibrated to deliver the field equivalent of an application rate of 100 gallons per acre (gpa). After treatment the plants were removed to the greenhouse and maintained under good growth conditions.

DEPR:

FIG. 1 illustrates the weed control obtained with the free acid, and the loss of weed control typically observed when the free fatty acid is saponified, e.g., converted to the potassium salt. The isopropylamine salt produced a herbicidal effect more like that obtained with the free acid than that obtained with the saponified salt.

DEPR:

Another greenhouse trial was conducted to compare the isopropylamine salt to the free fatty acid at a low delivery volume (25 gpa). Barnyardgrass and sicklepod were cultivated in the greenhouse as described above. Plants were treated at the 2-3 true leaf stage. The free fatty acid and the isopropylamine salt mixtures were prepared in water by dilution of the appropriate concentrates, as described above, and applied to the plants in a track sprayer at the field equivalent of 25 gpa. After application, plants were returned to the greenhouse and maintained under good growing conditions. Herbicidal effects were assessed as described above at 4 DAT.

DEPR:

FIG. 2 illustrates the herbicidal effects of the free fatty acid and the isopropylamine salt on barnyardgrass and sicklepod at an application delivery rate of 25 gpa.

DEPR:

Greenhouse trials were carried out to demonstrate the herbicidal activity obtained following application of fatty acid salts of several organic amines. Florida beggarweed, velvetleaf, barnyardgrass, and crabgrass were used in these experiments. These weeds were planted in 2-times 2-inch pots in a soil-less potting mix (PROMIX) and were cultivated in greenhouses that were maintained at daytime temperatures of 70-90 degree F., and were watered by sub-irrigation to maintain vigor. Plants were treated at the 2-3 true leaf stage.

DEPR:

The fatty acid organic amine salt formulations were prepared by standard procedures similar to those described above, but with the following modifications: the sec-butylamine salt was approximately 19% by weight of the organic amine; the tryptamine salt, 20%; n-amylamine salt, 16%; n-hexylamine salt, 14%; and ethanolamine salt, 10%. Aqueous mixtures derived from these formulation concentrates were prepared at a 2% active ingredient rate, calculated as the free acid, by appropriate dilution in water. The test mixtures were applied to plants in a track sprayer delivering the field equivalent of 100 gpa. After application, plants were returned to the greenhouse and maintained under good growing conditions. Herbicidal effects were assessed as described above 4 DAT. Tables 1 and 2 show the herbicidal effects of the fatty acid organic amine salts.

WEST

L5: Entry 8 of 21

File: USPT

Apr 21, 1992

DOCUMENT-IDENTIFIER: US 5106410 A
TITLE: Fatty acid based herbicidal compositions

ASNM:
Safer, Inc.

ASZZ:
Safer, Inc.

ABPL:
An environmentally compatible herbicidal composition comprises a fatty acid active ingredient, and a surfactant component. In one embodiment the composition comprises a ready-to-use microemulsion having a fatty acid active ingredient, one or more quaternary ammonium salt surfactants and water. Another embodiment comprises a concentrated herbicidal formulation having a fatty acid active ingredient and one or more surfactants. The concentrate may subsequently be diluted with water to yield a ready-to-use formulation. Each of these compositions is a foliar applied herbicide which effectively controls a variety of unwanted weed and grass species.

BSPR:
Recently, salts of fatty acids, primarily sodium or potassium fatty acid salts, have been used commercially as pesticides. Compositions having excellent pesticidal properties which exploit these salts are available commercially from Safer, Inc., under the trademark SAFER INSECTICIDAL SOAP. A herbicide active composition utilizing partially saponified fatty acids as the active ingredient is sold by Safer, Inc. under the trademark SHARPSHOOTER. These fatty acid salts are effective, naturally occurring pesticides which have no known long term environmental effects. Although such fatty acid salts are effective herbicides, it would be desirable to provide an alternative composition having an unsaponified active ingredient while maintaining the environmental compatibility of the pesticide and reducing the eye and skin irritancy of the product.

BSPR:
The present invention features environmentally compatible herbicidal compositions having fatty acid active ingredients. In one embodiment, the herbicidal composition comprises a ready-to-use microemulsion having the fatty acid active ingredient in combination with water and one or more surfactants, preferably in the form of quaternary ammonium salts. In another embodiment, the herbicidal composition comprises a concentrate having a fatty acid active ingredient and one or more anionic and/or nonionic surfactants. This concentrate may be formed into a ready-to-use emulsion upon the addition of a suitable amount of water to dilute the active ingredient to desired concentration levels. The herbicidal compositions of this invention exhibit effective, broad-spectrum herbicide activity. Moreover, the compositions are contact herbicides which have little or no residual soil activity and are rapidly degraded and used as a nutrient source by soil microorganisms. These compositions are also substantially non-toxic to humans and animals, and, in ready-to-use form, are not corrosive to the eyes and skin.

DEPR:
Table II, shown below, illustrates various preferred combinations of fatty acids and surfactants which may be used to prepare the concentrated herbicide of this invention. The most preferred is formulation G which, in addition to the fatty acid, includes about 18 percent Stepfac 8170 (phosphate ester of alkyl phenoxy polyethoxyethanol) and about 2 percent Dowfax 3B2 (sodium salt of alkyldiphenyl oxide sulfate). It is believed that the Dowfax surfactant improves the

oxide sulfate). It is believed that the Dowfax surfactant improves the composition by helping to stabilize the composition by preventing the creaming which often results when only an ethoxylated phosphate ester is used as the surfactant. Another useful, albeit somewhat less stable, formulation is Formulation C of Table II which includes only an ethoxylated phosphate ester (either Stepfac or Emphos) as a surfactant.

WEST

L5: Entry 13 of 21

File: USPT

Jan 8, 1991

DOCUMENT-IDENTIFIER: US 4983591 A
TITLE: Environmentally safe, broad spectrum insecticide

ASNM:
Safer, Ltd.

ASZZ:
Safer, Ltd.

BSPR:
Salts of fatty acids, primarily sodium or potassium fatty acid soaps, recently have been used commercially as an insecticide. Compositions having excellent insecticidal properties which exploit these salts are available commercially under the trademark SAFER INSECTICIDAL SOAP. This product accordingly constitutes an exception to the trend noted above. These fatty acid soaps are naturally occurring materials having no known long term environmental effects. They are very effective against mites and soft bodied insects such as aphids and whiteflies, but less effective against other types of insects.

DEPR:
In the first preferred embodiment, the composition of the salts of fatty acids is an aqueous solution comprising about 50 percent by weight of a mixture of potassium salts of fatty acids and unneutralized fatty acids and about 30 percent by weight of ethanol. A suitable solution is available commercially from Safer, Inc. of Wellesley, Mass. under the trademark Safer Insecticidal Soap. The composition of this product varies slightly from batch to batch, but always includes at least about 70 percent salt (or acid form) oleic acid, and at least about 6 percent salt (or acid form) linoleic acid. The remainder of the solutes comprise other fatty acids or salts having between 12 and 20 carbon atoms. The fatty acid salt component is present in the concentrate at levels in the range of 10 to 50, preferably about 20, percent by weight.

DEPR:
The currently preferred embodiment of the domestic concentrate of the invention is made by mixing and gently agitating 100 parts Safer Insecticidal Soap (50 parts salts of fatty acids, 30 parts ethanol, and 20 parts water), 121.5 parts water, 25 parts isopropyl alcohol, 0.05 parts butylated hydroxytoluene, and 3.5 parts purified pyrethrum extract (20%). As formulated, the concentrate has a pH within the range of 7.5 to 8.8, preferably 8.0. This is diluted 20:1 with water before application to a plant.

DEPR:
The currently preferred embodiment of the ready-to-use formulation of the invention is made by mixing and gently agitating 100 parts Safer Insecticidal Soap (50 parts salts of fatty acids, 30 parts ethanol, and 20 parts water), 4646.5 parts water, 250 parts isopropyl alcohol, 0.05 parts butylated hydroxytoluene, and 3.5 parts purified pyrethrum extract (20%). As formulated, the concentrate has a pH within the range of 7.5 to 8.8, preferably 8.0.

DEPR:
The currently preferred embodiment of the commercial concentrate of the invention is made by mixing and gently agitating 100 parts Safer Insecticidal Soap (50 parts salts of fatty acids, 30 parts ethanol, and 20 parts water), 11.16 parts water, 7.5 parts isopropyl alcohol, 0.05 parts butylated hydroxytoluene, and 3.5 parts purified pyrethrum extract (20%). As formulated, the concentrate has a pH within the range of 7.5 to 8.8, preferably 8.0. This is diluted 40:1 with water

before application to a plant.

DEPR:

A highly concentrated form of an insecticide comprising fatty acid salts and pyrethrum extract was tested for animal toxicity. Rats were used for testing oral and inhalation toxicity, rabbits for dermal toxicity, rabbits in a Draize test for primary eye irritation and in a test for primary skin irritation, and guinea pigs for dermal sensitivity studies. The solution used comprised 40 percent Safer Insecticidal Soap and 0.4 percent pyrethrin (unless otherwise indicated below), a concentration approximating that of the preferred concentrate and about 20 times that of the ready-to-use solution. The following results indicate that the insecticide of the present invention, even in highly concentrated form, is substantially non-toxic to animals.

DEPR:

Experiments were conducted to evaluate the foliar and floral phytotoxicity of the insecticidal solution, as fatty acid salts have been observed to exhibit herbicidal activity. A representative number of vegetables, ornamental trees and shrubs, and floral plants were tested in a greenhouse. The plants were sprayed to run-off, and damage was assessed after 24 hours (for floral damage) and after 2-7 days (for foliar damage). The test samples were varied in pH, alcohol content, active fatty acid soap content, and pyrethrum content. As controls, a solution of 0.02 percent pyrethrins with piperonyl butoxide, and distilled water were used.

WEST

L5: Entry 15 of 21

File: USPT

Feb 27, 1990

DOCUMENT-IDENTIFIER: US 4904645 A
TITLE: Environmentally safe, broad spectrum insecticide

ASNM:
Safer, Ltd.

ASZZ:
Safer, Ltd.

BSPR:
Salts of fatty acids, primarily sodium or potassium fatty acid soaps, recently have been used commercially as an insecticide. Compositions having excellent insecticidal properties which exploit these salts are available commercially under the trademark SAFER INSECTICIDAL SOAP. This product accordingly constitutes an exception to the trend noted above. These fatty acid soaps are naturally occurring materials having no known long term environmental effects. They are very effective against mites and soft bodied insects such as aphids and whiteflies, but less effective against other types of insects.

BSPR:
The salts of fatty acids preferably consists of an aqueous solution comprising about 49% by weight of a mixture of potassium salts of fatty acids and unneutralized fatty acids. A suitable solution is available commercially from Safer, Inc. of Wellesley, Mass. under the trademark Safer Insecticidal Soap. The composition of this product varies slightly from batch to batch, but always includes at least about 70% salt (or acid form) oleic acid, and at least about 6% salt (or acid form) linoleic acid. The remainder of the solutes comprise other fatty acids or salts having between 12 and 20 carbon atoms. The soap component is present in the concentrate at levels in the range of 15 to 25, preferably about 20, percent by weight.

BSPR:
The currently preferred embodiment of the concentrate of the invention is made by mixing and gently agitating 400 parts Safer Insecticidal Soap, 485 parts water, 100 parts isopropyl alcohol, 0.2 parts butylated hydroxytoluene, and 15 parts purified pyrethrum extract (20%). As formulated, the concentrate has a PH within the range of 7.5 to 8.8, preferably 8.0. This is diluted 20:1 with water before application.

DEPR:
A highly concentrated form of an insecticide comprising fatty acid salts and pyrethrum extract was tested for animal toxicity. Rats were used for testing oral and inhalation toxicity, rabbits for dermal toxicity, rabbits in a Draize test for primary eye irritation and in a test for primary skin irritation, and guinea pigs for dermal sensitivity studies. The solution used comprised 40% Safer Insecticidal Soap and 0.4% pyrethrin (unless otherwise indicated below), a concentration approximately double that of the preferred concentrate and about 40 times that of the ready-to-use solution. The following results indicate that the insecticide of the present invention, even in highly concentrated form, is substantially non-toxic to animals.

DEPR:
Experiments were conducted to evaluate the foliar and floral phytotoxicity of the insecticidal solution, as fatty acid salts have been observed to exhibit herbicidal activity. A representative number of vegetables, ornamental trees and shrubs, and floral plants were tested in a greenhouse. The plants were sprayed to run-off, and damage was assessed after 24 hours (for floral damage) and after 2-7

run-off, and damage was assessed after 24 hours (for floral damage) and after 2-7 days (for foliar damage). The test samples were varied in pH, alcohol content, active fatty acid soap content, and pyrethrum content. As controls, a solution of 0.02% pyrethrins with piperonyl butoxide, and distilled water were used.